

CLAIMS:

1. A method for assembling a programmer for a medical device, the method comprising:
 - placing a first circuit board within a first housing member;
 - placing a second circuit board over the first circuit board;
 - placing a second housing member over the second circuit board to substantially enclose the first and second circuit boards;
 - loading instructions into memory on one of the first and second circuit boards via a loading port accessible via the second housing member; and
 - placing a plate member within the second housing member to cover the loading port.
2. The method of claim 1, further comprising placing one or more input buttons over the second circuit board prior to placing the second housing member.
3. The method of claim 1, further comprising placing the first circuit board, the second circuit board, the second housing member and the plate member using an automated placement technique.
4. The method of claim 1, wherein the first circuit board includes telemetry circuitry and the second circuit board includes a display and display circuitry.
5. The method of claim 4, wherein the display is a liquid crystal display.
6. The method of claim 4, wherein the second circuit board includes control circuitry to drive the telemetry circuitry and the display circuitry.
7. The method of claim 6, wherein the control circuitry disables the display and the display circuitry during telemetry.

8. The method of claim 4, wherein the first circuit board comprises a bottom side substantially adjacent to the first housing member, the method further comprising mounting an internal antenna on the bottom side of the first circuit board and coupling the internal antenna to the telemetry circuitry.

9. The method of claim 8, wherein the internal antenna forms an aperture and the first housing member forms a molded area that defines a battery bay that extends at least partially into the aperture.

10. The method of claim 4, wherein the second circuit board comprises a top side substantially adjacent to the second housing member, the method further comprising mounting the display on the top side of the second circuit board and coupling the display to the display circuitry.

11. The method of claim 4, further comprising coupling an external antenna to the telemetry circuitry via a cable.

12. The method of claim 11, wherein the external antenna defines an aperture with a channel formed to hold a portion of an item of clothing associated with a patient and thereby hold the external antenna in a substantially fixed position relative to an implantable medical device.

13. The method of claim 1, wherein the loading port is a JTAG port.

14. The method of claim 1, further comprising selecting the instructions based on one of a plurality of different functional sets desired for the programmer.

15. The method of claim 1, wherein the plate member includes a transparent portion sized to expose a display mounted on the second circuit board.

16. The method of claim 1, further comprising selecting the plate member from one of a plurality of plate members having different configurations based on a match between the configuration of the plate member and a type of medical device programmer being assembled.

17. The method of claim 16, wherein the plate member is printed with information to identify the programmer type.

18. The method of claim 1, wherein the plate member configuration comprises a size, a shape, a printed graphic, and a number of apertures to accommodate input buttons extending outward from the programmer.

19. The method of claim 1, wherein the second housing member includes a first aperture to expose a display mounted on the second housing member, and a second aperture to expose the loading port.

20. The method of claim 1, further comprising applying a programming device to the loading port via an aperture defined by the second housing member to load the instructions.

21. The method of claim 1, wherein the first circuit board includes a first electrical connector interface and the second circuit board includes a second electrical connector interface, the method further comprising coupling the first connector interface to the second connector interface to electrically connect the first circuit board to the second circuit board.

22. The method of claim 1, wherein placing the first housing member and the second housing member comprises forming an aperture for an infrared interface to receive changes to software executed by a processor within the programmer during an infrared communication session.

23. A programmer for a medical device comprising:
a first circuit board placed within a first housing member;
a second circuit board placed over the first circuit board;
a second housing member placed over the second circuit board to substantially enclose the first and second circuit boards;
a loading port accessible via the second housing member to load instructions into memory on one of the first and second circuit boards; and
a plate member placed within the second housing member to cover the loading port.
24. The programmer of claim 23, further comprising one or more input buttons placed over the second circuit board prior to the second housing member being placed.
25. The programmer of claim 23, wherein the first circuit board, the second circuit board, the second housing member and the plate member are stacked in substantially vertical alignment with one another.
26. The programmer of claim 23, wherein the first circuit board includes telemetry circuitry and the second circuit board includes a display and display circuitry.
27. The programmer of claim 26, wherein the display is a liquid crystal display.
28. The programmer of claim 26, wherein the second circuit board includes control circuitry to drive the telemetry circuitry and the display circuitry.
29. The programmer of claim 28, wherein the control circuitry disables the display and the display circuitry during telemetry.

30. The programmer of claim 26, wherein the first circuit board comprises a bottom side substantially adjacent to the first housing member, the programmer further comprising an internal antenna mounted on the bottom side of the first circuit board and the internal antenna coupled to the telemetry circuitry.

31. The programmer of claim 30, wherein the internal antenna defines an aperture, the programmer further comprising a battery bay extending at least partially into the aperture.

32. The programmer of claim 31, wherein the first housing member includes a molded area that defines a battery bay adjacent the first circuit board.

33. The programmer of claim 32, further comprising an access opening in the first housing member to gain access to the battery bay for placement of batteries.

34. The programmer of claim 26, wherein the second circuit board comprises a top side substantially adjacent to the second housing member, wherein the display is mounted on the top side of the second circuit board and the display coupled to the display circuitry.

35. The programmer of claim 26, further comprising an external antenna coupled to the telemetry circuitry via a cable.

36. The programmer of claim 35, wherein the external antenna defines an aperture with a channel formed to hold a portion of an item of clothing associated with a patient and thereby hold the external antenna in a substantially fixed position relative to a medical device.

37. The programmer of claim 23, wherein the loading port is a JTAG port.

38. The programmer of claim 23, wherein the instructions are selected based on one of a plurality of different functional sets desired for the programmer.

39. The programmer of claim 23, wherein the plate member includes a transparent portion sized to expose a display mounted on the second circuit board.

40. The programmer of claim 23, wherein the plate member is selected from one of a plurality of plate members having different configurations based on a match between the configuration of the plate member and a type of medical device programmer being assembled.

41. The programmer of claim 40, wherein the plate member is printed with information to identify the programmer type.

42. The programmer of claim 40, wherein the plate member configuration comprises a size, a shape, a printed graphic, and a number of apertures to accommodate input buttons extending outward from the programmer.

43. The programmer of claim 23, wherein the second housing member includes a first aperture to expose a display mounted on the second housing member, and a second aperture to expose the loading port.

44. The programmer of claim 23, further comprising a first electrical connector interface included on the first circuit board and a second electrical connector interface included on the second circuit board, wherein the first connector interface couples to the second connector interface to electrically connect the first circuit board to the second circuit board.

45. The programmer of claim 23, wherein the first housing member and the second housing member form an aperture for an infrared interface to receive changes to software executed by a processor within the programmer during an infrared communication session.